

ABSTRACT OF THE INVENTION

Methods and apparatus are provided an electrostatic discharge (ESD) protection device having a first terminal and a second terminal. The ESD protection device comprises a vertical transistor having a collector coupled to the first terminal, a base, and an emitter coupled to the second terminal. A zener diode has a first terminal coupled to the first terminal of the ESD protection device and a second terminal coupled to the base of the vertical transistor. Subsurface current paths are provided to redistribute current from a surface of the vertical transistor in an ESD event. The method comprises generating an ionization current when a zener diode breaks down during an ESD event. The ionization current density from a surface zener diode region is reduced. The ionization current enables a transistor to dissipate the ESD event.